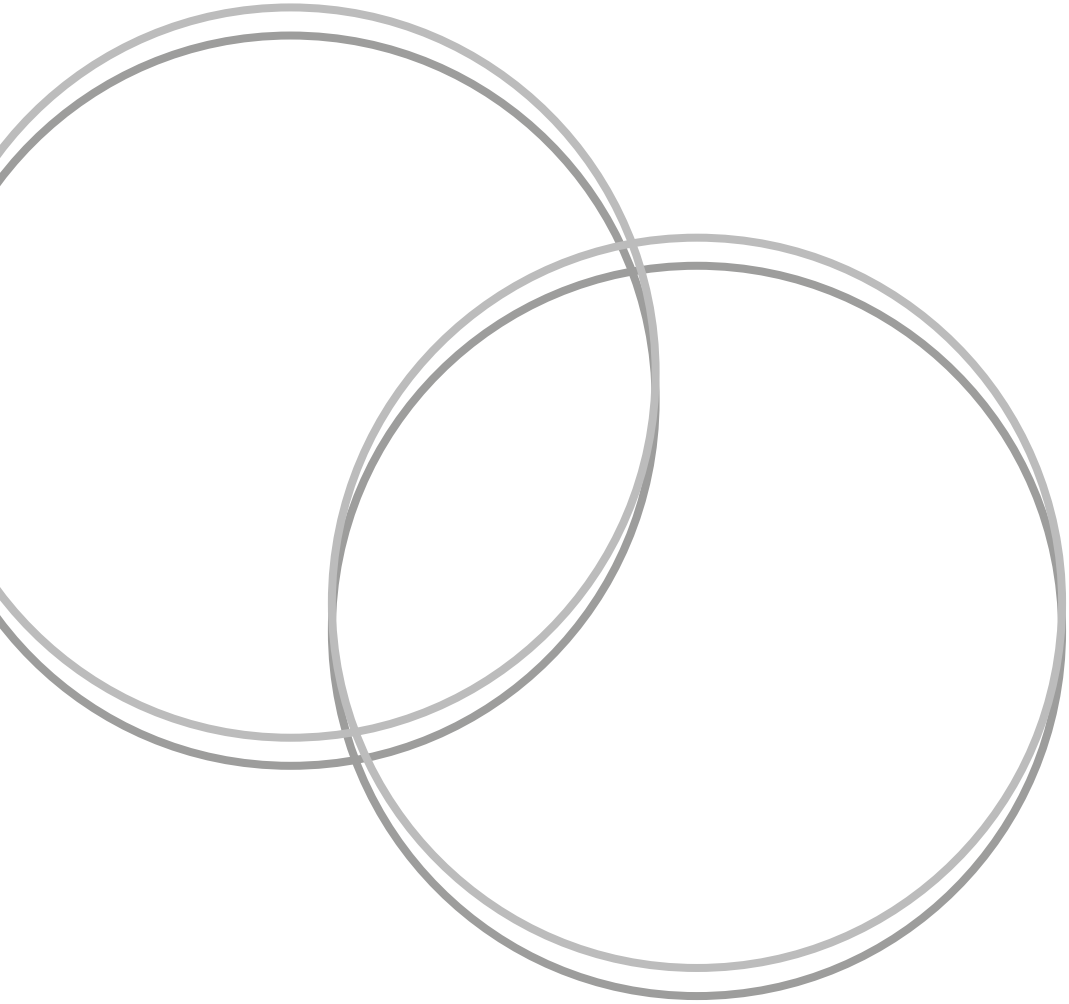
NHS
Oxford University Hospitals
NHS Foundation Trust

Corneal Graft Surgery (Penetrating Keratoplasty – PK)

Information for patients



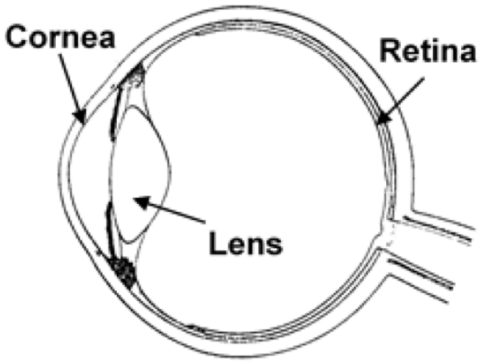
Corneal Graft Surgery (Penetrating Keratoplasty – PK)

This leaflet explains what the cornea is, why you may need a corneal transplant, what happens during penetrating keratoplasty (PK), and the possible risks, benefits, and aftercare.

What is the cornea?

The cornea is the clear, dome-shaped "window" at the front of your eye. It allows light to enter, focuses it, and helps you see clearly.

If the cornea becomes cloudy, scarred, or misshapen due to disease or injury, light cannot pass through properly. This results in blurred or reduced vision.



What is a Penetrating Keratoplasty (PK)?

PK is a type of corneal transplant in which the full thickness of the cornea is replaced with a healthy donor cornea.

During surgery, the central part of your cornea (usually about 8mm across) is removed and replaced with a similar piece of clear cornea from a donor, secured with very fine stitches.

Other options

Not everyone with corneal problems needs a transplant. Depending on your condition, you may first be offered:

- Eye drops
- Glasses
- Contact lenses
- Partial-thickness corneal surgery (where only part of the cornea is replaced)

A full-thickness transplant (PK) is usually only recommended when vision or comfort cannot be improved by these treatments.

Benefits of PK

PK can:

- Improve sight
- Reduce pain and discomfort
- Repair the cornea if it has developed a hole or split

About 3 out of 4 patients regain vision good enough to drive legally after PK. However, most will still need glasses or contact lenses, and sometimes further surgery. Recovery is slow and can take up to 24 months for the best vision to be achieved.

The operation

- **Anaesthetic**: Most patients have a general anaesthetic (asleep), though local anaesthetic with sedation may be possible.
- **Duration**: The operation usually takes 1-1.5 hours.
- **Procedure**: The damaged cornea is replaced with donor tissue and secured with fine stitches (invisible to the eye and not felt).
- **Afterwards**: A protective shield is placed over the eye. Most patients go home the same day, though some may stay overnight.

Donor cornea

Many people donate parts of their body after their death, including their corneas, in order to help others. The individual or their family consent to the use of the eyes for medical purposes after their death, e.g. by carrying a donor card. The donor cornea is taken from an eye that has been removed from a person who has died.

Unlike organ transplants such as kidneys or hearts, a corneal transplant does not need to be matched to your blood group or tissue type. This means a suitable donor cornea is usually easier to find, however, it usually necessary to wait for some time until a cornea in the correct condition is available.

Corneas are not taken from donors known to have infectious conditions. All donors are screened for HIV or Hepatitis viruses before their corneas are used. The cornea is treated with antibiotic solution before being used for your operation. Unfortunately, not all conditions can be detected, and it is not possible to guarantee that the donor cornea is free from infection. The risk of CJD (brain disease) from corneal grafting is unknown.

Specialist eye surgeons use donor corneas which have rigorous procedures to ensure the best quality and safest corneal tissue.

Risks of PK

Like all major eye operations, PK carries risks. These may occur immediately after surgery or many years later.

- **Immediate**:
  - Infection (rare but can be sight-threatening, around 1 in 1,000 cases)
  - Bleeding inside the eye (rare but can be sight-threatening, around 1 in 500 cases)
  - Damage to other eye structures
- **Early (weeks–months)**:
  - Rejection of the donor cornea (about 1 in 6 patients within two years)
  - Raised eye pressure (glaucoma)
  - Problems with wound healing
  - Stitches becoming loose, broken, or infected (sometimes needing adjustment or removal)
- **Late (months–years)**:
  - Cataract (clouding of the eye's natural lens)
  - Graft failure (the cornea becomes cloudy again)
  - Ongoing glaucoma (can require additional drop or surgery treatment to prevent loss of vision)
  - Retinal detachment (rare)
  - Weakness at the graft site, leaving the eye more prone to injury

If a graft fails, another transplant may be possible, but each repeat carries a higher risk of failure.

After the operation

- **Follow-up**: You will be seen within the first week and then regularly, usually 4–6 times in the first year.
- **Eye drops**: Essential to prevent infection, inflammation, and rejection.
  - At first: every 1–2 hours during the day
  - After 1 month: usually 4 times a day
  - Duration: at least 12 months, sometimes longer
- **Vision**:Your sight will be blurred at first but should gradually improve. Vision may fluctuate until several months after the stitches are removed. Full recovery may take up to 24 months.
- **Stitches**: Stitches remain in place for at least one year, though this varies. Removal may be done in the outpatient clinic or theatre, usually under local anaesthetic, as a day procedure.
- **Eye care**: The eye will always remain more vulnerable to injury. Avoid rubbing, protect the eye from trauma, and use protective eyewear when needed.
- **Work**: Expect at least one week off work, longer for physically demanding jobs.
- **Sport / hobbies**: Avoid sports and active hobbies for at least four weeks.
- **Flying**: Air travel is generally safe after surgery.

Symptoms of graft rejection

Because the donor cornea is "foreign" tissue, your immune system may try to attack it. Rejection can occur at any time, even years later.

Seek urgent same-day medical attention if you notice:

- Red eye
- Sensitivity to light
- Sudden loss of vision
- Pain

Rejection is often reversible if treated promptly, but delays can cause permanent sight loss.

Long-term results

Most corneal grafts last many years. Success depends on the reason for surgery:

Reason for graft	Chance graft remains clear at 5 years
Keratoconus	95%
Fuchs' dystrophy	80–90%
Scarring or inherited problems	80–90%
Bullous keratopathy	50–80%
Previous corneal infection	50–80%
Fungal infection or multiple grafts	0–50%
Severe surface disease or very large graft	0–50%

Good drop use and regular check-ups improve long-term success.

Consenting for information sharing

To ensure the highest quality transplant material is used, we must share your details with NHS Blood and Transplant (NHSBT), who supply donor corneas.

If you do not give consent, donor tissue availability may be affected.

For further details, please see:

NHS Blood and Transplant: Giving consent for use of your information

Waiting list

You will be placed on a waiting list for donor tissue.
Waiting times vary.

You will usually be given a few weeks' notice of your surgery date by post or telephone, though sometimes only days (e.g. in case of cancellations).

Contacting us

If you have a minor eye problem, please seek advice from your GP, optician or pharmacist.

Call our specialist telephone triage number if you need **URGENT** help or advice or if you notice:

- Redness and/or swelling of your eye lids and/or eyeball
- Any loss of sight
- Intense pain

Tel: **01865 234 567** and choose the option for **Eye Emergencies**

Monday to Friday 8:30am - 4:30pm

Saturday and Sunday 8:30am - 3:30pm (including Bank Holidays)

You will be able to speak to an ophthalmic health professional who will advise you.

If you need advice out of hours, please phone **NHS111** or your out of hours GP practice.

Further information – **NHS Website www.nhs.uk**

Further information

If you would like an interpreter, please speak to the department where you are being seen.

Please also tell them if you would like this information in another format, such as:

- Easy Read
- large print
- braille
- audio
- electronic
- another language.

We have tried to make the information in this leaflet meet your needs. If it does not meet your individual needs or situation, please speak to your healthcare team. They are happy to help.

Author: Aisling Higham
May 2026
Review: May 2029
Oxford University Hospitals NHS Foundation Trust
www.ouh.nhs.uk/information

Images reproduced with permission from Martin Leyland, Royal Berkshire Hospital

Leaflet reference number: OMI 116414